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23 April 1979

MEMORANDUM

SUBJECT: Intelligence Analysis Quality

A memorandum on managing the improvement of intelligence analysis asserted that defining good intelligence analysis was a necessary step in the management process. The attached rambling essay (of which I'm not particularly proud) is a first cut at such a definition.

It will not satisfy anyone, but those who have analyzed successfully will see some of their instincts reflected. It is, however, abstract. I ask the forbearance of those who cannot provide their own examples to support the generalizations and ask them to accept on faith for a time that each point speaks to a real and important problem in intelligence analysis. Examples can be provided, but at considerable cost in length and classification. For the moment a more or less philosophical discourse is needed. If we are impatient with this and so limit ourselves to "real" problems like, "How do we fix our assessment of Taoist resurgence?" or "Who will make up the next class of our analytic methods course?" we doom ourselves to inefficient and often counterproductive groping.

If we are to ever get far enough ahead of the problem of improving intelligence to control it instead of having the problem drive us, we must step back, decide what we want to achieve (which the attached paper addresses in part), then decide how to work toward that (which the memorandum on management addresses in part), and finally set out to do it, necessarily piecemeal.

The attached paper is intended to serve as a target for attacks. Therefore, ample space is left throughout for marginal notes. Hopefully it will be circulated for comment and criticism, e.g. to the NIOs and Office Directors. One could then accumulate comments and criticisms, discuss the issues revealed by them, and revise the paper. Some such process is needed if this is to be more than an academic exercise because, if any program is to succeed in improving intelligence analysis, it must fully recognize that we are trying to change human beings. Proclamations don't change people. People change only if they are persuaded and people are persuaded most readily if they are genuine participants in defining goals and how to achieve them.

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Some copies of this memorandum will have attached copies of an interagency intelligence memorandum to support the premise that the ideas expressed in the paper are not pie-in-the-sky. If this IIM could be produced in the absence of clear guidance, we can reasonably expect that much more and better analyses can be produced if sufficiently explicit guidance existed, and was accepted.

Pleas for a philosophical discourse notwithstanding a reasonable question for a hard-nosed manager to ask is, "If I believe all this, what do I do?" Several answers are suggested in the memorandum on management. Some answers are alluded to in the attached paper. No answer is given either place with sufficient specificity to be implemented straightaway. This is because the underpinning of both papers is that successful solutions can only be devised by those who must implement them. Therefore, the papers only sketch what such solutions might look like.

However, to close on a concrete note one can envision a group of managers and analysts debating the proposition (made in the attached paper) that review processes would be more efficient if they operated on outlines rather than finished essays and concluding that the following procedural rules should be implemented.

- Each analysis will be prepared in an outline format.
- After the analyst has completed the outline no editing is permitted until the review process is complete.
- All reviewers must provide marked up copies of the basic analysis. The rationale for each indicated change must be provided.
- The final review authority will examine the basic analysis together with the comments of intermediate reviewers and will indicate which changes are to be incorporated.
- Then the analyst incorporates all authorized changes into the final analytic paper which becomes the official record of the analysis.
- Thereafter an editor writes essays in various forms, styles and lengths (subject to the analyst's review) to satisfy various consumer needs.

One could imagine this group arguing that, no matter how stilted this seems, we must cut the Gordian Knot if we are to hope to abolish the

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endless nit-picking and wordsmithing that now characterize our review processes and that stifle creativity and bog down production. Then again, the group might produce a totally different plan. The one thing that can be said with confidence is that if they themselves produce a plan that addresses the problems, it will be better as a practical matter than anything I could conjure.

Attachments

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## INTELLIGENCE ANALYSIS QUALITY

"Let these examples also serve to inform the politician of vast projects that the human mind can never penetrate however extensive it may be, because their minute combinations must be developed in order to foresee or regulate events that depend on future contingencies. We can explain past incidents clearly, for their causes are now discovered, but we always deceive ourselves about the future which is concealed by secondary causes from our rash and prying inspection. That the expectations of politicians should be disappointed is not a phenomenon peculiar to the present age. It has been the same during all the ages in which human ambition gave birth to grand projects."

Fredrick, The History of the Seven Years War, I, viii-ix, II, 369

Fredrick the Great of Prussia serves to start us on the first task, defining what good intelligence analysis is not. The second task, defining what it is, will follow and will be harder.

### WHAT GOOD INTELLIGENCE ANALYSIS IS NOT

Fredrick pointed out that good intelligence analysis is not the same as consumer satisfaction. Consumers haven't changed in two hundred-odd years; they'll never be satisfied. Failures will be heralded and successes taken for granted, the latter because (at least in part) the timely anticipation of events allows a decisive policymaker to preempt them. This is not to argue for ignoring serious policymaker critiques of intelligence; it does argue that each critique should be judged on its own merits. Also it argues more generally that good press will not be ours.

Second, good intelligence analysis need not mean good intelligence. Intelligence consists broadly of three phases, collection, analysis and dissemination. For intelligence to be successful all three steps must be taken; a misstep anywhere can cause failure. Absent the basic information, the most finely tuned analytic machinery cannot produce useful intelligence. Absent

the ability to provide assessments in forms intelligible and persuasive to the people who should act, the most insightful analysis is worthless. In any case, we will not address here questions of collection and dissemination in spite of the fact that they are important, we will limit ourselves to the middle stage.

Next, when our microscope focuses on the middle stage we find that there are finer gradations in the process of intelligence analysis itself. We also see that intelligence analysis is a seamless web so that any cut for purposes of taxonomy does violence to the whole. Nonetheless for our purposes here it will be useful to cut the web into four sections that we may call the functions of intelligence and describe by the following catch phrases:

FACTS & FIGURES: Who's where? When does how much rain fall? How big is it? How much does it cost? etc.

RECKONING & REPORTING: What happened yesterday or did nothing happen? What is the military capability of an assembly of men and equipment? What is the productive capacity of an assembly of men and machines? etc.

PREDICTION & PROGNOSSES: What will happen tomorrow or next year? What are the critical factors influencing developments? What are the key uncertainties? etc.

WATCH & WARD: Among all the scenarios that might unfold, which ones are both sufficiently likely and sufficiently important to the US to merit special attention?

Each of these functions, make somewhat different demands on the analyst. Here we will not attempt to address all of these demands, rather we will concentrate on the demands of the PREDICTION & PROGNOSSES function with only peripheral mention of the others.

Fourth, we will ignore questions of relevance even though it is clear that when all is said and done superb analyses of irrelevant problems are not better than shoddy analyses of urgent problems. Ignoring relevance only recognizes that we cannot address all of the problems of the world at once.

Fifth and finally, we should distinguish between intelligence officers as "analysts" and as "seers." We are not talking here about the latter function, valuable as it may be. In discussions of these matters there is a tension, usually not articulated or even recognized, between two views. On the one hand some think of good intelligence as the result of certain methods of reasoning or information processing which if properly applied to any situation will produce truth. Others think that truth emerges from a mental process which is too subtle and complex to be codified so it can be achieved only by long and intimate involvement with the subject area. Reality surely lies in the middle. I know that years at sea gives a ship's captain a "feel" for his vessel so that he can often sense when things are not right, but it is only the ability to mentally break down the myriad of sights, sounds, smells, or their absence into mechanical, electrical and electronic systems (i.e. analysis) that allows him to convert that sense into a program of troubleshooting that will guide his crew to a defective diode or a stuck valve which can then be repaired. A similar, but more complex situation, must exist when one is trying to comprehend the workings of a political and economic system in another culture. And success can only come from a proper, and perhaps fortuitous, marriage of intuition and science.

We must and do try to immerse people so fully in the culture of another country that they will be able to sense what is going to happen even if they cannot articulate why. This is an essential objective of the United States Intelligence Community, and while it is not the subject of our investigation here, two points about it are relevant. First, we seek for seers most urgently in political analysis because this is the area which we understand least; we intuitively recognize that we have no immediate hope of

modeling how the Lower Slobovians operate, but we trust that the bright people we emerge in the culture of Lower Slobovia for years will assimilate it in some undefined way and will thereafter be able to predict the course of Lower Slobovian politics. The second relevant point follows from the first. That is, compared to the paucity and inadequacy of the criteria for judging analysis, we have no criterion for judging prescience. So in the end pinning our hopes on area specialists is an act of faith.

#### WHAT IS INTELLIGENCE ANALYSIS?

Having stated several things intelligence analysis is not, we must define what we mean by analysis in general and intelligence analysis in particular. One philosopher might define analysis as the separation of a complex whole into its constituent parts in order to study them and their interconnections individually. Another might, with equal support in philosophical literature, define analysis as testing the validity of an hypothesis by tracing out its implications; its validity is tentatively accepted with increasing confidence as more and more implications are traced out and matched with reality, but as soon as one falsehood is found the hypothesis is declared invalid. Each of these views captures some of what we mean even though we do not and never have used the term "analysis" rigorously in the Intelligence Community. Indeed, in some cases we have used "analysis" as a synonym for "writing style"; this clearly has been an inappropriate use of the term, but even so there remains ample room for differing usages.

Having said this and further having accepted for purposes of discussion some combination of the two standard philosophical definitions of analysis, a reasonable question is, "What sets intelligence analysis apart from analysis in general?" The quick answer is, "Not very much." This is valuable because it suggests that we do not have to confine ourselves to post mortems of intelligence failures or even studies of intelligence successes. We can learn from the experiences of all the sciences and humanities.

However, the quick answer deserves amplification lest we ignore two critical points that distinguishes

intelligence analysis from analysis in general. First, intelligence is different in the degree to which it deals with information that belongs to knowledgeable thinking people who have reason to conceal or distort it. Therefore, far more than even social scientists, intelligence analysts must treat their raw material with a skepticism just short of paranoia. Second, intelligence analysis, like other relevant analysis in government and business, often must meet deadlines. Such deadlines rarely exist to the same degree in the academic world so the writings in the academic literature on how to do good analyses should be taken with a grain of salt. The fact not recognized in some of this literature is that in the real world, "the excellent is the enemy of the good," if being excellent instead of just good in an analysis means that decisions will have been made before the policymakers see the excellent analysis or if it means that other areas are being neglected while fine-tuning one.

We now turn to the subject at hand, "What constitutes good analysis?" with a final warning. Our discussion will be disappointing because there's not very much definitive to be said. (That's why it's taking so long to say it!) We need to admit at the outset that quality in intelligence analysis is fundamentally an aesthetic judgment. We cannot let this be an excuse for doing nothing, but we should not hoist ourselves on our own yardstick just for the sake of having some formula or code that looks scientific. We will never have an explicit quantitative measure of analytic quality, but we can and must have explicit qualitative statements of our aesthetic criteria. The remainder of this paper is an attempt to state them in the spirit of providing targets at which to shoot rather than of carving scriptures on tablets. So we really are talking about some desirable features of analysis rather than defining good analysis.

For purposes of discussing analysis we will break it into half a dozen parts which can be called:



Models - the framework within which we view the part of the world under study.

Assumptions - those things which are taken for granted.

Hypotheses - things we don't take for granted and, indeed, among which we want to be able to judge.

Facts - those things that we see as relevant to distinguishing among hypotheses and as bearing on our comfort with our assumptions and models.

Reasoning - the process by which we combine assumptions and facts within our models to distinguish between our hypotheses.

Conclusions - our assessments of the hypotheses under consideration.

As we talk about each of these in turn we can describe a number of pitfalls that have been discovered, usually inadvertently and always painfully, by analysts down through the ages. And having done so, we will conclude, not surprisingly, that good analysis consists of having handled all of these six components of analysis well.

#### THE COMPONENTS OF ANALYSIS

Models are the central feature of good analysis. They are the bones on which the flesh can be hung. The word "model" is deliberately used recognizing that it curls many a humanist lip in disdain. This is because the issue is fundamental and cannot be evaded if there is to be any hope of dramatically improving the quality of intelligence analysis. Whatever the unpleasant connotations of being too mechanistic or too systems analytic, the issue must be faced squarely. Until we require ourselves to lay out explicitly our understanding of how the systems we study work, we have no hope of improving our institutional ability to understand year by year. Lacking models because there is nothing sufficiently solid to criticize, correct, restructure and observe, i.e. nothing concrete enough to grasp, and change or

to hold fixed to see if it works. On occasion I have worked with analysts of strange cultures over a period of months during which time we radically altered our view of how people in that culture function at least three times, sometimes passing through old models without fully realizing it. Only when time permitted digging through the records of old work did our oscillations become apparent. Without explicit mental models intellectually we are like ants riding a pendulum; we think we're traveling, but we're only oscillating in minor intellectual fads.

What is a model? It is an explicit statement of the process at work. It need not be a huge mathematically derived computer-based thing, although in some cases (such as understanding missile performance) that is appropriate. A model may also, for example, be a seminal paper on how the Saudi government and royal family interact, or it may be only an outline. The point is that when the model is explicit we can critique it and improve. We can go back to previous work and say, "These developments are not consistent with what we said." We can then either modify the model or prove that the developments are, after all, consistent. But had the original work simply laid out the Delphic prophecy that "The Saudi royal family will see its future as intimately tied to developments in the Arab world and will react so as to protect its fundamental interests"...How many times have we read that?...we couldn't critique or improve on it. We couldn't even get hold of it!

In addition to being explicit, what should a model be? It should be elegant! Elegance, that is, in the sense of the mathematicians to whom elegance means the proper balance between brevity and coverage. A model should be brief and yet capture the essence of reality. Thus the simplest explanation need not be elegant; it may be merely an appeal to a slogan, e.g. explaining French foreign policy as arising from a French vision of grandeur. On the other hand, convoluted arguments are noxious even if they are carefully crafted and succeed

in explaining reality. Copernican astronomical theory triumphed over the Ptolemaic not because it predicted the movement of celestial bodies more accurately, but because it was simpler and yet still predicted.

If one believes this about models, what does one do? First one doesn't worry very much about OSI, OWI or even OSR whose people, by and large, have grown up acclimated to the use of models. One worries moderately about OER. One worries a lot about OPA where the whole concept of formal (i.e. explicit) mental models is anathema. In this environment a right first step is to require that everything must be outlined instead of written in the customary essay format. The outline provides a better framework for evaluation than the essay where verbage and adverbage can conceal a host of sins. If the review process operated on outlines (with the essays being written only after the substantive analytical work and review was done) it would be much more productive.

Models play another role when fleshed out with assumptions, hypotheses, facts, reasoning and conclusions. Typically we become more confident of a theory or model as more and more facts accumulate in support of it and we reject it when too many "facts" are inconsistent with it. A model, by being explicit, gives us the ability to do more than simply wait helplessly to see what facts fate dumps in our bucket. It allows us to conceptually vary the components of the model one by one to purposefully see if our theory is adequate. A particularly fortuitous combination of insight and circumstances in this exercise will occasionally allow us to formulate what some philosophers of science call the crucial experiment. In an intelligence officer's terms this means the ability to direct collectors in search of those crucial pieces of information that will allow us to determine if our whole theory is supportable. More often the use of explicit models will not lead us to such grandiose heights, but it will often give us the ability to guide the collectors to more fertile fields than they would otherwise cultivate.

A final comment on models risks taking this discussion far into esoteric areas. It is that the explicit statement of the relations which are assumed to exist in our subject area allows us to consider in an orderly fashion what things are constant and hence reliable and what things are variable. The degree to which we can do this will be the major determinant of our predictive power. For example, the reason that physics theories generally predict well while economic theories predict poorly is that physical models contain "conservation laws" at critical points while economic models do not. For example, Newtonian physics is largely based on the conservation of momentum and energy while microeconomic theory is based on the concept of individual economic wants or values which do not obey conservation laws, i.e. a person's desire for a good is not invariant, but increases or decreases in anticipation of future price changes. The existence of this difference between physics and economics would not even be apparent to us unless the two sciences had laid out their respective theories explicitly so that we could study the differences between them and recognize in both cases the limitations on prediction that are implicit in the strength of their conservation laws. Few intelligence models can include conservation laws as strong as those in economics, let alone those in physics. But the explicit enunciation of how we think things work will allow us to intelligently judge the circumstances under which habits will remain operative, i.e. crude conservation laws will be obeyed. Thus to say, "the Vietnamese are bloody minded" is useful only if it defines how the senior decisionmakers in the Vietnam government will respond to various pressures and defines the limits within which those pressures may vary without causing a fundamental change.

Assumptions. Analysis in any field must proceed on the basis of assumptions. In fact, to a large extent, the degree to which a set of assumptions commonly held by all practitioners in a field are adequate to provide the basis for fruitful work is a measure of the advancement of the field. The two major requirements we should impose on our assumptions is that they be explicit and that they be consistent across our hypotheses.

A major defect of much intelligence analysis is that too many assumptions are implicit. As a consequence errors creep into the process. Consider, for example, assumptions about US policy. Intelligence analysts read the newspapers; thereby they absorb certain perceptions about US policy which are commonly held by Americans concerned with foreign policy. On the other hand they are rarely privy to the thinking of senior policymakers and therefore do not have an accurate picture of the options that are or could be considered. Thus their analyses can be based on inadequate understanding and will be read by people whose frame of reference is different from theirs. It would be easy to argue that policymakers should tell intelligence analysts what they think are viable options, but this line of argument is pointless. First, because policymakers often don't know well enough themselves to be able to articulate the range of options any better than intelligence officers could. Second, they are often too busy to do so even if they could articulate options better than we. And finally because, for a variety of reasons, this is a matter outside the control of intelligence officers. Therefore, as a practical matter, what intelligence officers can do is to establish a rule that their work will contain an explicit statement of what they assume reasonable US policy options are and then to trace out the impact of those options on the situation under study. It may well be that the result will be a conclusion that US policy will not impact on unfolding events. However, it is also possible that the explicit statement of such assumptions will lead to further questioning of the analysts by policymakers who see other options that should be explored. Laying out options and exploring their implications need not imply endorsement of one or another option.

Definitions also take on the character of assumptions. For example, political analysts typically (and subconsciously) define as equivalent the names of a government leader, government building, capital, country and nationality. Thus Brezhnev, Kremlin, Moscow, USSR, Russians and Soviets are used as synonymous. Such shorthand is an

insidious perpetrator of the homogeneity syndrome, i.e. treating foreign nations as if they were homogeneous. The syndrome often also involves the unwritten assumption that heads of state and leadership elites make decisions solely on the basis of a careful and completely rational calculus of world politico-strategic facts rather than emotion or internal power struggles. To root out this form of implicit assumption analysts should be forbidden for one full year to employ this shorthand. Furthermore until examination of internal diversity becomes commonplace a statement like, "I have examined all important groups in Brazil and find unanimity with respect to this matter." should be required in all analyses that do not explicitly examine the diversity in the situation under study.

Consistency of conclusions from year to year is not a virtue, but consistency of assumptions among hypotheses within a particular analysis is essential. I cannot illustrate this point directly because those analyses I know which lay out hypotheses explicitly seem to keep assumptions consistent but most intelligence analyses don't lay out hypotheses and so the question of consistent assumptions doesn't arise. However, the flavor of the problem can be captured by looking at analyses of different questions pertaining to the same issue. For example, how often upon probing do we find the assumptions behind analyses of India's foreign policy to be different than the assumptions behind analyses --on the self-same issues--of Pakistan's foreign policy? All too often if one believes that Pakistan-India relations are a crucial part of the two nations' foreign policies.

Hypotheses. An analysis should explicitly evaluate at least three viable alternative hypotheses each of which purports to explain what we see. "Viable" means that a patently false strawman, set up only to be knocked down, won't do. If there is only one viable hypothesis the analyst should abort his project and turn to a worthwhile topic. "Alternative hypotheses" should be meaningful in the sense that which hypothesis is true should have a significant impact on the future. Otherwise the matter is not worth pursuing.

Setting three as the minimum number of hypotheses reflects the experience of people who have

tried to explore decisionmaking in groups of people. The rule of thumb that has emerged from working with committees and decision papers is that 3-5 alternatives represents the range that can be handled when spoken and written English is the main analytic tool. Fewer than three alternatives rarely can cover the range of options credibly, and as one moves beyond five alternatives people tend to become confused. In the abstract, however, our goal should be to examine alternatives which for practical purposes exhaust the possibilities and yet are limited to those that are significantly different from one another in the sense that whether one hypothesis or another is true matters. In some OSI, OWI, OSR and OER analyses we already regularly employ many hypotheses, but these are cases where the main analytic tools are mathematical. To the extent that we improve our analysis in general we can perhaps handle more hypotheses.

But for the moment we should walk with three and defer consideration of running. Lest we let our ambitions soar too high at once, we should note that the high, low and best estimates of foreign military forces produced in various intelligence documents exemplify one way to cope with the problem of alternative hypotheses. Anyone who doubts the difficulty of changing habits of doing business should retrace the agonies of the mid-60s when senior Defense Department policymakers dragged the Intelligence Community kicking and screaming into this now commonplace practice. It will be no easier to get analysts to formulate alternative political or economic scenarios, alternative motivational explanations, etc.

This example, however, does serve to illustrate the practical importance of the use of alternative hypotheses because the projection of high, low and "best estimate" forces is in large part a matter of differing hypotheses of foreign intentions. The

intentions vs. capabilities debate frequently arises in military intelligence. Clearly intentions unsupported by capabilities are not important, except perhaps in the case of a foreign government which is so oblivious to consequences that it might act in defiance of the discrepancy between its intentions and capabilities. On the other hand focusing totally on capabilities (which is generally equivalent to focusing on "high" projections) violates a central purpose of intelligence, to approximate the truth. The use of three hypotheses leaves a lot to be desired, but it is a better approximation than any one hypothesis.

A final comment on hypotheses is that even in the 3-5 range, the "right" number of hypotheses to be subjected to detailed examination will vary with circumstances. Initially various hypotheses must be subjected to an informal evaluation in which the probability of each hypothesis is weighed with its importance if correct. In this way both very interesting but highly improbable and likely but trivial hypotheses will be eliminated from further consideration in order to increase the efficiency with which a smaller group of operationally important and reasonably likely hypotheses can be studied.

Facts. A common saw, especially at middle levels, on the policy side of the government is, "Give me the facts, I'll draw my own conclusions." This naive view fails to realize that what is a fact is a matter of judgment, but a similar naivete often afflicts intelligence officers. The intelligence officer's version of this error is failure to realize that facts and theory are not separable. The accuracy of one's mental model of the process under study determines to a large extent whether one recognizes a fact when one sees it. To illustrate the point imagine ourselves as Eskimo schoolchildren reading a Post "Style" section



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"Are we sure we were looking hard enough for evidence of a deal to buy the Soviet military's support of a move to depose Krushchev that we would not have missed a piece of evidence?"

Eliminating irrelevant facts in order to economize effort is also important. Because connections are especially fuzzy, political analysis is particularly susceptible to the intrusion of irrelevant information. The basic guideline for this is that a piece of data is not a "fact" (worthy of attention) unless it serves to:

- establish whether or not the mental model in use is adequate,
- determine if the hypotheses under study are mutually exclusive and exhaustive, or
- distinguish among the hypotheses under study.

Facts should be presented reasonably consistently. Apples are rarely compared to oranges in OWI and such comparisons are reasonably easy to detect in OSR, but in OPA it is sometimes hard to decide what's an apple and what's an orange.

Earlier we noted that intelligence analysis is unique in the degree to which it deals with information that belongs to knowledgeable thinking people who have reason to conceal or distort it. Therefore, we asserted that intelligence analysts must treat their raw material with a skepticism just short of paranoia. This applies particularly to those classes of "facts" which are susceptible to:

- Shifts of meaning in transmission and translation, a problem that can be especially significant in dealing with human reporting.

- Deliberate falsification with intent to deceive. The history of the intelligence business is full of examples of this.
- Fabrications without malicious intent, e.g. a common practice in journalism is to report as fact that which seems plausible in light of other information, ethnocentricity can be especially damaging here. This is not to argue that press reports should be treated with particular skepticism. It is to argue that the intelligence analyst should always be questioning the motives, knowledge and proclivities of every source of facts.

Reasoning. The lines of reasoning in an analysis should be arranged so that a literate person can trace clearly the connections between facts, assumptions and conclusions for each hypothesis. Each step of the reasoning should be clearly identifiable as implication or intuition. There is no sin in the latter. Indeed, as long as it is labeled as such that is what we want to pay area specialists to be able to do. One of the great intellectual beauties of good analysis in any field is the use of innovative techniques to carefully reason across, to bridge, the unknowns in the problem. In this respect, the intelligence analyst's problem is not radically different from the archaeologist's. However, the praise of intuition and imagination in any field should not be a warrant for sloppy reasoning. Again at the level of detail appropriate to distinguishing among the hypotheses under study it should be possible to follow the analyst's thought processes and to critique them. The earlier discussion of the utility of models for these purposes applies to reasoning as well and need not be repeated.

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Conclusions. Six years ago [ ] told analysts that the least important element in drafting an estimate is the conclusions. This remains true although [ ] might not agree with the reasons stated here. If everything else in an analysis is done well the conclusions will follow relatively easily as long as we recognize that "conclusions" is plural. The most important part of presenting conclusions is developing this plurality. Doing so consists of some or all of the following points.

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Differing views of truth can be held by reasonable men who examine the same analysis. These differing views should be presented clearly and objectively. It is not sufficient to say that CIA holds one view and DIA another. The analysis must be retraced to show how different weights put on different assumptions and facts and how different reasoning lead to the different assessments of the debated hypotheses.

A part of the conclusions of an analysis is identifying uncertainties and evaluating their importance, a process usually called sensitivity analysis. Virtually everything that enters into an intelligence analysis is uncertain so as a practical matter one cannot agonize over every uncertainty. The key in sensitivity analysis is to select those factors in the overall analysis which are both uncertain enough and influence the determination of which hypothesis is correct enough to merit detailed examination. Having made our selection we must ask how the evaluation of the hypotheses would change as the factors themselves change individually and in combination. There is no place in analysis that the intelligence officer's understanding of his subject is put to a harder test than in this elucidation. It is so hard that sins of omission must surely be more forgivable here than anywhere else. There are no rules except perhaps the thesis that it is better to be roughly right than precisely wrong.

Having dwelled on the need to illuminate uncertainty and disagreement, we must recognize that at the end we have a moral obligation to provide the policymaker with our judgment. This is an awesome responsibility because we are not dealing with trivia. One refuge from this responsibility has been sought all too often in the past, that is to state Delphic conclusions which can never be disproved by events. The obvious solution of requiring the analyst or team to state categorically which hypothesis is true is not, however, workable because analysts simply do not (and cannot) know.

A reasonable (and workable although painful) compromise is to require stating the likelihood of each hypothesis being true. This can be done with at least three degrees of precision.

-Approximate probabilities. Recognizing that precise probability statements, say to the second decimal place like 93%, will normally not be worth the effort to produce, we should only aspire at most to approximate probability statements like 90% or 35%.

-Odds. One can give a somewhat less precise assessment by using odds based on whole numbers. A mathematician would say that this means little in principle. However, some people feel more comfortable saying "3 out of 4 chances" than "75% probability," and for whatever reasons, readers do seem to take statements like "even odds" or "50-50 chance" as being less precise than "50% probability."

-Adjectival statements. For analysts who are simply petrified with fear at the prospect of using numbers words must suffice. The Sherman Kent chart is an attempt to codify such statements and to relate them to more precise measures. If we do no more than agree to use some such standard terminology we will have made progress because now an adjective like, for example, "probable" can mean anything from "just better than equally likely" to "virtually certain."

#### CLOSING REMARKS

When one has laid out an analysis in accordance with these guidelines what does one have? Some very long and pretty dull reading to be sure. However, one has the basis for a reasonably competent writer (who needs to know little about the subject) to repackage the product ad infinitum to serve the needs of high-level and low-level policymakers, and general thrill seekers. If the analysis is properly done, packaging the product for dissemination is relatively easy. Our current agonies over repeated reviews and debates ad nauseam over turns of phraseology arise in part because we are papering over obvious cracks in our analytic walls.

To repeat an assertion made in the context of models, one also has a vehicle which will facilitate future critiques of the analysis for everything is laid out naked inviting any would-be kibitzer to take pot shots. Even folk who do not understand the area under study will be able to detect the standard errors that have plagued men's intellectual endeavors in many fields. For example "good analysis," as seen here, makes such fallacies as "Achieving maximum gain at minimum cost" stand out more starkly to would-be critics.

Similarly, critics are invited to proclaim that the analyst has used too few indicators. Why will this be the case? Because people always use too few indicators whether they're betting on horses, planning personal estates or trying to detect the outbreak of war. Unconsciously we all pick a few, no more than half a dozen, things we look at in determining trends. This is inherent in our mental machinery. The analytic process can extend our horizons to perhaps tens or hundreds of things, depending upon how we go about it.

This assertion about the role of good analysis in facilitating criticism is repeated because it is fundamental. We must produce work that can be criticized! This goes very much against the human grain. No one likes to be "torn apart" by critics; everyone subconsciously seeks to avoid it by a variety of devices, some of which have been discussed above. Accepting this view implies that we will shift our thinking about good analysis away from the finished products of the Intelligence Community toward the intermediate products and processes. However, without a view of "good analysis" similar to the view here we have no way, consistently year after year as people come and go, to build a better and better understanding.

We should, however, end on a humble note. The Earl of Halsbury, drawing on his experience in World War II, lectured a group of analysts twenty-five years ago and pointed out that we will never reach the end of the process. He said,

"The content of a human social or historical situation is always richer than verbal analysis can display. Reality is like a tangled skein of threads. With infinite patience the analyst dissects one thread out of the bundle and is delighted to observe a causal nexus between its parts. We thus reach truth, but never The Truth. The reality inevitably bristles with more detail than can be apprehended as a whole."

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